


5-1930

Chemical Lecture Experiments

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Recommended Citation

Getchell, R. W. (1930) "Chemical Lecture Experiments," *Science Bulletin*: Vol. 2: No. 9, Article 4.
Available at: https://scholarworks.uni.edu/science_bulletin/vol2/iss9/4

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Henry's interests were those of the research worker rather than the engineer or inventor. When he had made a scientific discovery he was content, always willing to leave the development of practical devices and the monetary reward to others. And it was this singleness of purpose, this concern for the increase and dissemination of knowledge above everything else that enabled him to make so great a contribution to science, and through it to industry and to human welfare.

W. H. Kadesch.

CHEMICAL LECTURE EXPERIMENTS

Chemistry

Lecture experiments demand more time, require higher technical skill, and afford greater pupil interest than any other phase of chemistry teaching. As a corollary, we may add that they are most neglected, but if you name the teachers who are noted for their interesting, instructive, and skillful class room demonstrations, you are calling the roll of chemistry teachers of the first rank.

The first problem is selection. In this connection ask yourself, is the experiment instructive? An occasional spectacular experiment may be introduced for its elements of variety and surprise, but such fireworks must not become the "whole show". Indicate in advance what the experiment is to illustrate; and do not select several experiments which deal with the same point. As far as possible, let the class demonstrations represent ideas which cannot be conveniently handled in routine laboratory experiments.

Next to consider is assembly of apparatus. A chemistry teacher could profit by a course in commercial window trimming. He would learn to stress "key articles," to avoid elaborate and complicated arrangements, and above all, to make the layout look right from the sidewalk point of view. Every article should be in full view, every process should be on a sufficiently large scale as to be visible from all occupied seats, and every manipulation should be so deliberate as to be easily followed. Clean and pol-

ished articles, orderly and convenient arrangement on the desk, and scientifically looking setups—all add consciously or unconsciously to the favorable impression which the teacher is seeking to create.

Excepting time-tried experiments in the hands of an experienced manipulator, a rehearsal "behind the scenes" is as important in this field as in the realms of dramatics. An apparently simple experiment may fail to behave as it should unless the details have been carefully worked out by this preliminary rehearsal. Let us assume that the experiment has been moving along nicely toward the climax and that the class is keyed up and expectant—then it fails. Excuses and explanations cannot substitute for results. Better, far better, never to have tried than to have tried and failed.

Finally, the necessity for motivation should not be overlooked. By skillful questioning, seek to have the class anticipate and suggest the successive steps in the procedure. Encourage them to explain the phenomena as they develop. Use the blackboard for recording the equations involved, the laws and ideas illustrated, and the conclusions which can be arrived at. When desirable, pass samples of the reactants and resultants around the class.

Unfortunately, few, if any, good reference books on lecture experiments are available. The writer would be willing to list for you such as are on the market or even to send you a description of lecture experiments to illustrate definite topics if the demand warrants preparation of mimeographed copies.

Remember that the permanency of pupils' impressions increase in the order,—reading, seeing, doing.

R. W. Getchell.

The "male-water-sheep" which turned out to be a hydraulic ram may after all have its biological affinities. At any rate, Professor L. L. Huber of Hanover College, Indiana, keeps the ball rolling by pointing out that the hydraulic ram is the best source of "steel wool". He does not, however, designate the shearing season.